DOCUMENT RESUME

ED 241 384 SO 015 344

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TITLE Resource Conservation: A Static or Dynamic Concept?
PUB DATE Oct 83
NOTE 13p.; Paper presented at the National Council for Geographic Education Conference (Ocho Rios, Jamaica. October 23-28, 1983).
PUB TYPE Information Analyses (070) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Conservation (Environment); Definitions; Ecology; *Educational History; *Educational Needs; Educational Practices; Environmental Education; *Geography Instruction; Higher Education; Intellectual Disciplines; *Natural Resources; Textbook Content

ABSTRACT

The educational history of resource conservation as an academic discipline is discussed. Also examined is whether conservation should be taught as a static or dynamic concept. The first conservation text was written in 1910. Since then, geographers have stressed several approaches to resource conservation including the inventory and analysis of the nation's resource stock, conservation methodologies, the study of the interrelationships between resource complexes, regional resource development, and resource management. Specialization in resource conservation remains an important part of U.S. geography curriculum today. However, it is not clear how resource conservation is defined, nor is it clear from textbooks what the subject area comprises. When asked to define resource conservation, many students define the concept in the context of limitations. If geographers are locked in to such a conceptual framework, their view of present and future society must be constrained. What must be taught is a dynamic concept of resource conservation which recognizes that resources are functional--that they are defined in terms of use, whether the uses are consumptive or non-consumptive. (Author/RM)

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ED241384

National Council for Geographic Education - 1983 Meetings

Title of Paper: Resource Conservation: A Static or Dynamic Concept?

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Abstract

Specialization in Conservation, Resource Geography, and/or Environmental Studies, remains an important part of the geography curriculum in U.S. universities. Clearly, a large number of geographers identify themselves with this broadly labeled field. On the other hand, it is not clear how resource conservation is defined nor is it clear from the texts in the field what is viewed as comprising the subject area. This paper reviews a part of the literature and gives particular attention to the treatment of "resources" and " conservation" as philosophical concepts.

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Several things have happened recently that caused me to reconsider both the place of resource conservation in geography and the importance of the approach to resources and conservation that I have adhered to in my teaching and research. Thus, this paper is less a report on current research than it is a reaction to these issues and an attempt to stimulate discussion of some alternatives.

The first was the publication in the AAG Newsletter of April 1983 of data related to the topical proficiencies of AAG members; a second concerned the treatment of resource conservation raised in the course of reviewing texts in the field; yet another related to student understanding of the concept of resource conservation; and, finally, there were the various articles and reviews of resources and resource availability that have appeared in the press. These would appear, perhaps, to be unrelated issues, but they all focus on the question of resource conservation that I want to discuss with you.

Conservation has had a reasonably long history as an academic field of specialization in geography. Perhaps the first text was written as early as 1910, not by a geographer, admittedly, but by a geologist, Van Hise of the University of Wisconsin. The text was The Conservation of Natural Resources in the United States. In the years between the two world wars, geographers stressed several approaches to resource conservation: the inventory and analysis of the nation's resource stock; the conservation methodologies available; the study of the interrelationships between resource complexes; regional resource development; and resource management.

In particular, the experiences of the 1930's, when major regional development and/or conservation projects were undertaken -- the classic national example is the Tennessee Valley Authority (or TVA) begun in 1933, but more localized projects, such as the Muskingum Valley Conservancy District in Ohio, were also important -- stimulated interest and work in conservation-related issues. In the post-World War II period, attention shifted to problems of world overpopulation and to questions associated with the ability of lesser developed or emerging nations to fend for themselves. These interests were evident in the writings of William Vogt (The Road to Survival) and Fairfield Osborne (Our Plundered Planet), as some of you will recall.

One result was the development and/or expansion of programs in conservation in many U.S. colleges and universities. These led to the subsequent training of individuals specializing in conservation, particularly in soils and water resources, land use classification, aerial photo interpretation, etc. (At Ohio State, incidentally, a course entitled "Conservation of Natural Resources" has been offered since prior to 1920.) Emphasis was placed upon resource inventories -- it is fair to suggest that there was less concern with resource evaluation -- both by the Federal Government and by those engaged in writing conservation texts. Yet, when the AAG's commemorative volume, American Geography: Inventory and Prospect, was published in 1954, conservation was scarcely mentioned. Resources, as a topic, were discussed in a chapter on "The Geography of Resources."

Clearly, a change in focus occurred following publication in 1962 of Rachel Carson's Silent Spring, for in that volume the ecological consequences of chemical pollution, principally DDT, were explored and dramatized. Ecology became the new concern and, with it, the study of ecological relationships in nature. The geographer was not fully prepared to participate in these events despite the fact that Harlan Barrows had defined geography as "human ecology" as early as 1922 in his presidential address to the AAG. More recently, the terms environmental studies and environmental sciences have come into vogue reflecting, at least in part, the increased awareness of ecology and the interrelationships of organisms in the natural environment, as well as of man and his environment. In these fields, stress is placed upon natural systems and upon man's impact -- often viewed as negative -- upon these systems. Many texts in the field are written by non-geographers and the treatment of subject matter is decidedly ecological or biological in tone.

This background is not intended to summarize the course of events that bring us to our present situation. But the changes in direction suggested here are noted if only incidentally and by interpretation, in two separate accounts carried in the April 1983 AAG Newsletter (Vol. 18, No. 4). In the first report, entitled "1982 AAG Topical and Areal Proficiencies" (p. 22), the topical proficiencies identified by the AAG membership are summarized for the years 1975, 1978, and 1982. A total of 57 separate "proficiencies" are identified. In the period from 1975 to 1982, overall membership in the AAG apparently declined

by 20.5% (or from approximately 7,000 to 5,560 members for a net loss of about 1,440), and the relative importance of individual proficiencies was altered.

The ten fields identified by the largest number of geographers in 1982 were, however, the same as in 1975, with one exception. In their 1982 order, these included: Urban, (# 1 in 1975); Cultural (2); Cartography (8); Physical (4); Economic (3); Environmental Studies (6); Historical (5); Remote Sensing (21) replaced Regional Geography which had ranked 9th in 1975; Regional Planning (8); and Geomorphology (10). Of particular interest is the experience of two specialty topics -- Environmental Studies and Resource Geography. Conservation, incidentally, was not a recognized specialty, but was listed parenthetically under the heading, Environmental Studies. As with all groups, it is not clear, unfortunately, just what is included under these descriptive headings.

Environmental Studies is one of 15 of the 57 listed topical specialties to show growth with a 4.7% increase in numbers. It ranked as the sixth largest specialty group in 1975 with 655 members, or 9.4% of the total AAG membership, and remains sixth in 1982 with 686 members, or 12.3% of the membership identifying with this specialty. On the other hand, Resource Geography had a 19.7% loss, a loss roughly consistent with the overall decline in membership. Resource Geography ranked 17th in 1975 with 391 members, or 5.59% of the total, and 19th in 1982 when 314 members, or 5.64% of the membership, identified with it as a topical specialty.

Clearly, Environmental Studies, however defined in the survey, is identified by geographers as a major topical area of interest. On the other hand, traditional identification with Conservation no longer is distinguished and Resource Geography, although a listed specialty group, has lost member identification even though its share of total holds firm. One might wonder what the implications are of these changes.

A second article in the same issue of the Newsletter, on "Teaching Positions in Geography in the United States..." (pp. 14-15), reviews the number of times a teaching specialty was advertised each year from 1974 to 1982 in "Jobs in Geography" in the Newsletter. Of the 25 specialties identified in this report, only one, that labeled as "Environmental," interests us here. There is no listing of specialties in "Conservation" nor "Resource Geography," nor is there any explanation, again, of what subfields are included in the term "Environmental." In any case, the Environmental specialty ranked sixth out of the 25 specialties based upon positions advertised indicating the the broadly defined environmental field remains important.

For what they are worth, these data reflect a shift from a resource/conservation orientation in geography to one which is identified as environmental studies. Conservation, per se, and specific concerns related to the geography of resources -- once the focal points of the geographer's interests -- may be slighted now in favor of broader based environmental studies reflecting stronger ecological overtones. This may not be bad, but what is missing in many cases is an effective evaluation of resources both in terms of their functions in society and

in respect to their geographic presence -- i.e., their spatial distribution. This has concerned me as one attempting to provide a meaningful course in conservation, not to geography majors, as such, but to an array of students consisting of those specializing in a natural resources curriculum in which ecological issues may already form the larger part of their experiential background.

In an attempt to gauge their understanding or perception of both "resource" and "conservation" as concepts, I have, on occasion, asked them to provide a definition of these terms. Experience has shown that most have not been challenged to think about these terms; well over one-third, when the question is put to them, define resources in the context of limitations. That is, they perceive resources as finite or limited both in availability and potential. This is, essentially, a static view of resources. Such a view leads to a conservation philosophy or attitude dominated by an emphasis upon the need to save specific resources relative to future need. (Generally, the term "save" has a different connotation than the term "preserve," with the former implying the setting aside or maintenance of a resource stock for future consumptive use by man.)

If we are locked-in to such a conceptual framework, our view of present and future society must, by definition, be constrained. If we are to understand where man is in his evolution with nature -- that is, if we are to consider our future prospect with either hope or foreboding -- there must be an understanding of man's relationship with the natural environment, with, in effect, his potential resource base.

The static view of resources flies in the face of both traditional conservationists and those currently engaged in evaluating the effective role of resources in present and future societies. One of the founders of conservation, Gifford Pinchot, writing in 1910 (The Fight for Conservation), stated that "The first principle of conservation is development, the use of the natural resources...for the benefit of the people who live here now." Pinchot abhorred waste and so espoused "wise use," but he recognized that "There may be just as much waste in neglecting the development and use of certain natural resources as in their destruction."

Kenneth Boulding, a few years ago, and Julian Simon, currently, have borrowed heavily from Erich Zimmermann's concept of man's critical role in resource development, whether they are aware of it or not. Boulding has used the expression, "...the future is Santa Claus" to address the issue. It recognizes that current knowledge, as the basis for establishing or estimating our futures, is not perfect knowledge. That is, we cannot predict the future nor can we anticipate what is to be discovered or developed as a resource. On the other, it is man's know-how that is at the core of the functional resource argument -- i.e., resources are the products of man's knowledge. Furthermore, Boulding argues, it is man's know-how that gives us an opportunity to anticipate resource shortages and possible exhaustion, and provides the ability to adjust to alternative development strategies. Simon, in The Ultimate Resource, asserts that natural resources are "...practically available in limitless abundance..." The ultimate resource is people.

(And, the most recent reports from the Club of Rome founder -- Aurelio Peccei -- those original prophets of doom, suggest that that organization recognizes that there is hope for at least a reasonable future given man's critical role in resource development and his positive response to problems related to resource consumption.)

The dynamic concept of resource conservation recognizes that resources are <u>functional</u> -- that they are defined in terms of use whether the uses are consumptive (i.e., as in the case of mineral resources) or non-consumptive (i.e., as in the case of most psychic or esthetic resources). This is a man-centered point of view: a resource is the product of man's needs, wants, technologies, and esthetics. It reflects, as well, the particular values held at any one time or in any one place. Obviously, how we use resources is the basis for our attitudes towards conservation.

All use decisions carry with them benefits and costs derived from the use. In a sense, an effective resource conservation policy weighs the benefits against the cost of resource development and use both for the present, and to the extent possible, future society. Thus, whereas there may be benefits to some subset of the population in the exploitive use of a resource, these must be considered in terms of costs to the larger society. In the same way, however, the benefits derived from reserving space for esthetic purposes or in stockpiling a resource for future need must also be weighed against costs (i.e., what are the short-term costs to society of possible declining productivity, unemployment, declining living standards, reduced revenues and initiatives, etc.?).

Resource development and use must respond to the changing character of society and to its changing needs. Had we heeded the words of the Head of the U.S. Patent Office uttered in 1899 -- "Everything that can be invented has been invented" -- it is true that we would have larger existing stocks of certain mineral resources today, but the well-being of society, as measured in terms of food supply, life expectancy, health, overall quality-of-life, etc., would have been jeopardized. Not only have we utilized some of that resource stock, we have added to it immeasurably through the increased application of know-how to the production processes.

Current discussion continues to focus on the issue of growth in the society. Care must be taken not to assume that future growth will replicate our previous experiences. Future growth may respond to different needs and to different resources; it will be "measured" or "valued" differently. It may not be that we can or should forestall growth, but certainly the opportunity exists to consider the directions that growth takes. The present major socio-economic changes in the U.S. provide a case in point. In one sense, as our society shifts from an industrial economy to one called post-industrial (for lack of a better term) -- from "product" orientation to "service" orientation -- several trends may be discerned which have implication for resource use and for a shift in demand for individual resources.

In this connection, let me cite a few remarks from a major business journal (Forbes Magazine, "The Molting of America," 11/22/82). In assessing the current economic recession and

accompanying unemployment, it notes that "A given standard of living no longer requires the same amount of iron and steel, labor, energy, rubber, or glass it once did..." That is, "We are...using all the materials more efficiently...(and) less of the earth's natural resources."

There is, as well, the trend towards "downsizing." The post-industrial age is, in effect, "scaling down." It is reducing the use not only of natural resources, but of labor and capital, as well. The net effect: by making things smaller, there are fewer negative tradeoffs (this from the Chairman of Intel, a pioneer manufacturer of micro processing units). That is, new production requires less in terms of raw materials, power, and performance, and it also results in fewer negative impacts in the form of pollution and waste. Finally, it is clear that improved technology has permitted major shifts in resource conservation away from vulnerable resources, such as copper, towards those much less vulnerable, such as sand, in the development of fiber optics for the expanding communication system. These shifts are symptomatic of the directions of growth in the society.

Man's use and transformation of the earth is not new; what is new, and what poses a threat to ecological balance, is the rate at which earth resources are being used and transformed. But, the creation of the cultural environment and the intimately related transformation of the natural environment is the history of civilization. I cannot conceive of this transformation stopping except as civilization ceases. It may change direction and velocity, however. The issue, then, is not that tech-

nology, no matter now defined, should be halted, but rather how it can continue to be used in accord with essential ecological principles. This, in my mind, is the dynamic approach to resource conservation.